

BRUMBERG, A.S., prof.; VAKHURKINA, A.M.; VINOGRADOVA, T.P., prof.;
LAVRISHCHEVA, G.I., kand. med. nauk; PERMYAKOV, M.K., doktor
med. nauk; SMOL'YANNIKOV, A.V., prof.; STRUKOV, A.I., prof.;
otv. red.; DVIZHKOV, P.P., prof., zastititel' otv. red.;
APATENKO, A.K., kand. med. nauk; SENCHILO, K.K., tekhn. red.

[Multivolume manual on pathological anatomy] Mnogotomnoe rukovodstvo po patologicheskoi anatomii. Otv. red. A.I.Strukov. Moskva, Medgiz. Vol.6. [Pathological anatomy of diseases of the osteoarticular system, muscles, and tendons] Patologicheskaya anatomia boleznei kostno-sustavnoi sistemy, myshts i sukhzhilii, Red. tova T.P.Vinogradova. 1962. 518 p. (MIRA 15:4)

1. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for Strukov).
(BONES—DISEASES) (JOINTS—DISEASES) (MUSCLES—DISEASES)

STRUKOV, A.I., prof.

General morphology of the collagen diseases. Sov.med. 26 no.6:5-13
Je '62. (MIRA 15:11)

1. Chlen-korrespondent AMN SSSR.
(COLLAGEN DISEASES)

STRUKOV, A.I.; RABUKHIN, A.Ye.; KODOLOVA, I.M.; OLENEVA, T.N.; POLIKARPOVA, T.N.

Anatomical and roentgenological manifestations of fibrocavernous tuberculosis. Probl. tub. 40 no.6:74-81 '62 (MIRA 16:12)

1. Iz kafedry patologicheskoy anatomii (zav. - chlen-korrespondent AMN SSSR prof. A.I. Strukov) i Moskovskogo ordena Lenina meditsinskogo instituta imeni I.M.Sechenova i kafedry tuberkuleza (zav. - zasluzhennyy deyatel' nauki prof. A.Ye. Rabukhin) TSentral'nogo instituta usovershenstvovaniya vrachey na baze TSentral'noy klinicheskoy bol'nitsy Ministerstva putey soobshcheniya (nachal'nik A.A. Potsubeyenko).

STRUKOV, A.I.; KODOLOVA, I.M. (Moskva)

Pathogenesis and morphogenesis of pneumosclerosis. Klin.
med. 40 no.12:56-66 D '62. (MIRA 17:2)

1. Iz kafedry patologicheskoy anatomii (zav. - chlen-
korrespondent AMN SSSR prof. A.I. Strukov) i Moskovskogo
ordena Lenina meditsinskogo instituta imeni Sechenova.

ABRIKOSOV, Aleksey Ivanovich (1875-1955), akademik; STRUKOV, A.I., prof.,
otv. red.; RYVKIND, A.V., prof., red.; SEROV, V.V., dots., red.;
ABRIKOSOVA, F.D., kand. med. nauk; KUSEVITSKIY, I.A., red. izd-
va; UL'YANOVA, O.G., tekhn. red.

[Allergy and problems of pathology] Allergiya i voprosy patolo-
gii. Moskva, Izd-vo Akad. nauk SSSR, 1963. 487 p. (MIRA 16:4)

1. Chlen-korrespondent Akademii meditsinskikh nauk SSSR (for
Strukov).

(ALLERGY) (PATHOLOGY)

STRUKOV, A.I.

New methods of research in current pathological anatomy. Vestn.
Akad. med. nauk SSSR 18 no.7: 19-26 '63 (MIRA 17:2)

I. I. Moskovskiy ordena Lenina meditsinskiy institut imeni
I.M.Suchanova i laboratoriya serdechno-sosudistoy patologii
Instituta morfolologii AMN SSSR.

STROKOV, A. I.

"Dynamics of metabolic derangements in myocardial infarction."

report submitted for 2nd Intl Cong, Histochemistry & Cytochemistry, Frankfurt,
16-21 Aug 64.

STRUHOV, A. I.

"Collagen diseases as observed in the Soviet Union."

report submitted for 94th Annual Mtg, Intl Academy of Pathology, Philadelphia,
7-10 Mar 66.

1st Moscow Med Inst im Sechenov

STRUKOV, A.I.

General morphology of immunological processes under experimental and clinical conditions. Vest. AMN SSSR 18 no.11:13-18'63
(MIRA 17:7)

1. I Moskovskiy ordena Lenina meditsinskiy institut imeni I.M. Sechenova.

LOPPE, V.I.; STBUKOV, A.I.; SEMOV, V.V.; PRAY, I. .

Experience with the experimental reproduction of a systemic
lesion of the connective tissue. Vest. AMN SSSR 18 no.11:
29-38 '63 (MIRA 17:7)

1. Institut eksperimental'noy meditsiny AMN SSSR i I Moskovskiy
meditsinskiy institut imeni I.M.Sechenova.

STREKOV, A.I., prof., zaslužennyy deyatel' nauki

Aleksai Ivanovich Arrikosov (1875-1955); en his 20th birthday.
Arkh. pat. 27 no.1:3-8 '65. (MIRA 18:4)

1. Chlen-korrespondent AMN SSSR.

STUKOV, A.I., prof.; VASIL'YEVA, N.N., assistant; RABEN, A.S., starshiy
nauchnyy sotrudnik

Histochemical characteristics of a sarcoid granuloma. Trudy
1-go MMI 22:301-314 '63 (MIRA 18:2)

PLOTNIKOVA, N. Ye., mladshiy nauchnyy sotrudnik; BUVAYLO, S.A., assistant;
OREKHOVICH, V.N., prof.; STRUKOV, A.I., prof.

Changes in the aorta under the influence of glycerin. Trudy
1-go MMI 22:239-248 '63 (MIRA 18:2)

TAREYEV, Ye.M., kand. med. nauk, red. ASTASHEVA, M.G., kand. med. nauk, red. SIDORIN, Ya.A.,
kand. med. nauk, red. SOROKIN, A.I., kand. med. nauk, red.
CHURILOVA, A.I., red.

[Current problems of rheumatology] Sovremennyye problemy
revmatologii. Moskva, Meditsina, 1985. 143 p.
(MIRA 18:12)

1. Akademiya meditsinskikh nauk SSSR. Moscow. A. Deystvi-
tel'nyy sled AMN SSSR i t.d. (1984).

1. The first of the two main parts of the report is a

description of the methods used in the study. The second part is a

discussion of the results of the study. The results of the study are

STHUKOV, A.I., prof.

Histochemistry in pathological anatomy. Trudy 1-go MMI 22:
15-27 '63 (MIRA 18:2)

1. Chlen-korrespondent AMN SSSR.

STRUKOV, A.I.; LAPIN, S.K. (Moskva)

Classification of changes in the peripheral nervous system and the morphological signs of compensatory adaptations; a reply to a discussion. Arkh. pat. 26 no.8:81-85 '64 (MIRA 18:2)

1. Kafedra patologicheskoy anatomii (zav. - chlen-korrespondent AMN SSSR prof. A.I. Strukov) I Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova.

STRUKOV, A.I., prof.; RUBINA, I.V.

Report on 20 general-institute clinicoanatomical conferences of the Pattoanatomical Section of the Clinics and the Department of Pathological Anatomy of the 1st Moscow Medical Institute for 1961-1963. Arkh. pat. 27 no.1:91-96 '65.

(MIRA 18:4)

1. Predsedatel' obshcheinstitutskikh kliniko-anatomicheskikh konferentsiy patologoanatomicheskogo otdeleniya klinik i kafedry patologicheskoy anatomii i Moskovskogo ordena Lenina meditsinskogo instituta imeni Sechenova (for Strukov).

SMIRNOV, A.I.; SMIRNOVA, Z.S.; SHAMANAYEV, I.P.; TOCHILIN, V.Ye., otv.
red.; STRUKOV, A.N., red. [deceased]; MARKOCH, K.G., tekhn. red.

[Manual for the sorting and classifying of international mail
at post offices in the U.S.S.R.] Posobie po obrabotke i oform-
leniiu mezhdunarodnoi pochty v mestakh mezhdunarodnogo pochtovogo obmena SSSR. Moskv., Gos. izd-vo lit-ry po vopr^{sam} sviazi i radio, 1960. 90 p. (MIRA 15:3)

1. Russia (1923- U.S.S.R.) Glavnoye pochtovoye upravleniye.
(Postal service--Foreign mail)

STRUKOV, A. N.

STRUKOV, A. N. -- "The Effect of Coke on Metal Smelting in a Cupola Furnace." Acad Sci USSR, Inst of Mineral Fuels, Moscow, 1956. (Dissertation for the Degree of Candidate of Technical Sciences)

SO: Knizhnaya Letopis' No 44, October 1956

STRUKOV, A. N.

13499* (Russian) Effect of Coke Properties on the Process of Smelting Cast Iron in a Cupola. *Vlianiye svoystv kuksa na protsess pлавки чугуна в выплавке. A. N. Strukov. Leningradskaya Pravda, no. 5, May 1957, p. 17.*

Describes experiments for increasing the production of a cupola by using various types of coke. Specific properties of coke are very important. Standard coke is unsatisfactory for obtaining the most effective performance. Properties of foundry coke depend on selection of the charge and on the technology of coking.

RG day

ANNENKOVA, V.I., DMITRIYEV, G.M., SYRIN, K.I.; STRUKOV, A.N.

Metallurgical coke from Irkutsk basin coal. Izv.vost.fil.AN SSSR
(MIRA 10:9)
74-28 157.

Institut Gornykh i Khimicheskikh Akademi nauk SSSR.
(Irkutsk region--Coke)

STRUKOV, A. N.

24-7-14/28

AUTHORS: Annenkova, V. Z., Dmitriyev, G.N., Syskov, K.I. and Strukov, A.N. (Moscow, Irkutsk).

TITLE: Metallurgical coke produced from the coal of the Irkutsk-Cheremkhov Basin. (Metallurgicheskiy koks iz ugley Irkutsko-Cheremkhovskogo Basseyna).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.7, pp.113-115 (U.S.S.R.)

ABSTRACT: Enormous deposits of coal are available in Western Siberia. For producing coke from this coal it is necessary to add lean coal, since without such addition the produced coke is full of cracks. As a result of this the various research institutes controlled by the Ferrous-Metallurgy Ministry have proposed the use of coking charges containing up to 40% of coal from the Kuzbas. In this paper attempts are described of obtaining coke directly from the Irkutsk-Cheremkhov coal using as an admixture semicoke produced from the same coal. Laboratory tests by IGI during recent years established the possibility of obtaining metallurgical coke from coal of this origin; in coking charges of this coal with an addition of 15% semicoke a strong coke was obtained which had high quality indices during tests in a drum

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Metallurgical coke produced from the coal of the Irkutsk-Cheremkhov Basin. (Cont.)

24-7-14/28

proposed by Nikolayev, I.N. (1). For confirming the laboratory results coking was effected in the semi-coking plant in Cheremkhov where an experimental coking furnace with a charge capacity of 500 kg is installed. In co-operation with the Irkutsk Geological Directorate (Irkutskoye Geologicheskoye Upravleniye) and the Vostsibugol' Combine, coal was chosen which was extracted from the most promising deposits of the Irkutsk-Cheremkhov Basin. Table 1 gives the analyses of the various coals which were used in the experiments. Table 2 gives the composition of individual charges and the yield of various grades of coke. Table 3 gives the sieve analysis of cokes from eight series of experiments, whilst Table 4 gives quality data of coke obtained in the various series of experiments. The results of the experiments are favourable and the authors recommend further experiments on pilot plant scale and larger scale for the purpose of solving finally the problem of producing coke from this coal alone. There are four tables and 5 references, all of which are Slavic.

2/2

SUBMITTED: September 22, 1956.
AVAILABLE:

KUDRYAVTSEVA, N.D., inzh.; STRUKOV, A.P., inzh.

Construction of an industrial signaling system. Energetik 11
no.8:30-32 Ag '63. (MIRA 16:10)

BARTOSH, N.T., inzh.; STRUKOV, A.V.

Mechanization of loading and unloading operations in industrial
transportation. Mekh.i avtom.proizv. 15 no.8:24-28 Ag '61.
(MIRA 14:9)

(Loading and unloading—Technological innovations)

AGAFONOVA, Z.Ya., kand. biolog. nauk; STRUKOV, A.V.; SAMOKHINA, V.P.;
KIRSANOV, N., inzh.; PILYUGIN, N.V.; TSVETKOVA, N.N.

Responses to our articles. Zashch. rast. ot vred. i bol.
(MIRA 17:6)
9 no.2:12-16 '64.

1. Zaveduyushchaya laboratoriyey zashchity rasteniy Kurskoy opytnoy stantsii (for Agafonova). 2. Direktor Pskovskoy gosudarstvennoy sel'skokhozyaystvennoy opytnoy stantsii (for Strukov). 3. Zaveduyushchaya otделom zashchity rasteniy Pskovskoy gosudarstvennoy sel'skokhozyaystvennoy opytnoy stantsii (for Samokhina). 4. Glavnyy agronom mekhanizirovannogo otryada Yaroslavskoy stantsii zashchity rasteniy (for Pilyugin). 5. Glavnyy agronom Tatarskoy stantsii zashchity rasteniy (for TSvetkova).

24(3)

AUTHORS:

Krivosheina, V. A., Minayeva, K. A.,
Sviridov, B. A.

SOV/48-22-12-33/13

TITLE:

Dielectric Investigations of Small Samples of Piezoelectric
Crystals (Dielektricheskiye issledovaniya kristallov
gigroskopicheskoy na малыkh tsvetakh)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958,
Vol. 22, No. 12, pp 1537-1540 (USSR)

ABSTRACT:

In the present paper a device is described by means of which
the temperature dependence of the dielectric constant $\epsilon(T)$ can
be plotted and the dependence of polarization on the electric
field $P(E)$ measured with small monocrystal samples within the
temperature range -190 to $+250^\circ$. The device can be used for
the investigation of dielectric anomalies in piezoelectrics and
for the determination of phase transitions in crystalline
dielectrics, the phase transitions being accompanied by the
variation of ϵ of the substance. The method of the RC-chain
described in publications (Refs 1, 2) was used for the device.
The principal radiotechnical scheme of the device (without
generator and potentiometer) is given in figure 1. Apart from
plotting the dependence $\epsilon(T)$, this device permits also the

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Dielectric Investigations of Small Samples of
Piezoelectric Crystals

SOV/48-22-42-33/53

determination of the occurrence of spontaneous polarization in the sample by means of an ordinary oscillographic scheme (no figure). The $\epsilon(T)$ -curves of 24 dielectrics were plotted to check the device, whereby it was shown that the dependence $\epsilon(T)$ can be plotted with sufficient accuracy. The discontinuity of ϵ at 120° was determined for polarized BaTiO_3 ceramics with a very small sample ($0.1 \times 0.1 \times 0.1$ cm). In $(\text{NH}_4)_2\text{SO}_4$ -monocrystals dielectric anomalies were determined at -51° . The temperature dependence of the polarization and the coercive field are given in figures 2 and 3. The temperature dependence of ϵ of $(\text{NH}_4)_2\text{SO}_4$ in the range of high temperatures is characterized by rapid increase of active crystal conductivity near the melting-point (130°). This method makes it possible to observe other processes related to the change of ϵ . The authors carried out experiments to investigate piezoelectric anomalies in tablet-shaped Smigret's salt and BaTiO_3 samples, yet without success. This effect is, however, completely concealed by the presence of air layers, binding agents and a chaotic arrangement of crystalline

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Dielectric Investigations of Small Samples of
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SOV/48-22-12-35/33

grains in the heterogeneous system. After all, the investigation of small samples seems to be less difficult and more reliable. The device described may be used in the search of new piezoelectrics (rough scheme in Fig 1) and for preliminary measurement of substances which can be obtained without difficulties in the form of small monocrystals. There are 4 figures and 8 references, 4 of which are Soviet.

ASSOCIATION: Rikhsanov, Yakhya; Moscow State University, Dr. M. V. Lomonosov (Dept. of Physics of the Moscow State University) (see M. V. Lomonosov)

Car 1/7

USCOMM-DC-60,555

S/146/60/003/005/003/017
B019/B054

9.6000

AUTHOR: Strukov, B. A.

TITLE: Instrument for Studying the Parameters of Ferroelectrics

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye,
1960, Vol. 3, No. 5, pp. 25-28

TEXT: It is possible with the circuit described here to observe the dielectric hysteresis of ferroelectrics by an oscilloscope. The circuit is a modification of the circuit used by Drenk et al. (Ref. 2). The dielectric hysteresis can be studied in a frequency range of from 50 cycles to 20 kilocycles at 1500 v. The voltage which is proportional to the crystal polarization is produced by a capacitor connected in series with the crystal. The voltage caused by the spontaneous polarization is produced by a balancing circuit lying in parallel to the crystal. These voltages are amplified, and the difference of the amplified voltages is supplied to the vertical deviation plates of an oscilloscope. A voltage which is proportional to the voltage applied to the crystal is applied to the horizontal deviation plates of the oscilloscope. Some photographs

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Instrument for Studying the Parameters of
Ferroelectrics

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B019/B054

of hysteresis loops are shown. The publication of this article was
recommended by the Kafedra kristallofiziki (Chair of Crystal Physics).
There are 3 figures and 2 non-Soviet references: 2 US. /c

ASSOCIATION: Moskovskiy ordena Lenina gosudarstvennyy universitet imeni
M. V. Lomonosova
(Moscow Order of Lenin State University imeni M. V. Lomonosov)

SUBMITTED: March 16, 1960

Card 2/2

24.7800 (1142, 1144, 1162)

85004
S/048/60/024/010/013/033
B013/B063

AUTHORS: Koptsik, V. A., Strukov, B. A., Sklyankin, A. A., and
Levina, M. Ye.

TITLE: Dielectric and Calorimetric Study of Ammonium Sulfate- and
Ammonium Fluoroberyllate Crystals

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 10, pp. 1228-1230

TEXT: Large ammonium sulfate monocrystals were obtained from an aqueous solution of the chemically pure reagent by applying the cooling method. Ammonium fluoroberyllate was synthesized by Lebeau's method (Ref. 5). The crystals were bred from its aqueous solution by evaporating at a constant temperature. Studied dielectrically were c-cuts of $(\text{NH}_4)_2\text{SO}_4$ crystals and b-cuts of $(\text{NH}_4)_2\text{BeF}_4$ crystals. The crystalline powder used for the crystal breeding was studied calorimetrically. ϵ and $\tan \delta$ were measured after all stabilization processes were over. Temperature dependences of ϵ and $\tan \delta$ are shown in Fig. 1 for the c-cut of $(\text{NH}_4)_2\text{SO}_4$ crystals,
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Dielectric and Calorimetric Study of Ammonium
Sulfate- and Ammonium Fluoroberyllate Crys-
tals

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and in Fig. 2 for the b-cut of $(\text{NH}_4)_2\text{BeF}_4$ crystals. The dependences $\tan \delta(T)$ have the same character in both crystal types. $\epsilon(T)$, on the contrary, exhibit considerable differences. The authors also considered temperature dependences of polarization for different field strengths in the region of phase transformations of the mentioned crystals. The respective results are published in a separate article. Fig. 3 shows the temperature dependence of specific heat c_p for $(\text{NH}_4)_2\text{SO}_4$. It was found that the cooling of the specimens at $T > T_K$ is not always accompanied by their transition into the piezoelectric phase. The undercooling was determined as being about $0.4 + 0.5^\circ$, which corresponds to dielectric measurement results. The mean value of integral temperature of transition was 490 cal/mole. The temperature dependence of c_p on $(\text{NH}_4)_2\text{BeF}_4$ is given in Fig. 4. The curve shows a characteristic λ -peak. No undercooling effect was observed. The discrepancy between the transition temperatures determined calorimetrically (-49.9 and -98.6°C) and those determined dielectrically (-47.6 and -93.4°C) is probably to be explained by an inaccurate graduation of the

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Dielectric and Calorimetric Study of Ammonium
Sulfate- and Ammonium Fluoroberyllate
Crystals

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thermocouples used in dielectric measurements. The authors thank
A. N. Izrailenko and A. F. Solov'yev for their assistance. The present
paper was read at the Third Conference on Piezoelectricity, which took
place in Moscow from January 25 to 30, 1960. There are 4 figures and
7 references: 3 Soviet.

ASSOCIATION: Moskovskiy gos. universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov).
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Card 3/3

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S/048/60/024/010/014/033
B013/B063

AUTHORS: Koptsik, V. A., Strukov, B. A., and Nevedomskaya, I. K.
TITLE: Study of Optical Properties of Some Piezoelectric Crystals
PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 10, pp. 1231-1233

TEXT: The authors studied the temperature dependences of birefringence in piezoelectric ammonium sulfate- $(\text{NH}_4)_2\text{SO}_4$ and ammonium fluoroberyllate crystals $(\text{NH}_4)_2\text{BeF}_4$. The scheme of a complete apparatus for crystallographic measurements is given in Fig. 1. The apparatus was constructed after blueprints supplied by the designers of the universal microscope stage (Ref. 6). In the practice, it permits an arbitrarily rapid heating or cooling of the specimen and a stabilization of temperature. The temperature course of birefringence for the c-cut of the $(\text{NH}_4)_2\text{SO}_4$ crystal is shown in Fig. 2. The marked change of the quantity Δn in the transition point makes it possible to observe optically the course of the phase

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Study of Optical Properties of Some
Piezoelectric Crystals

transition in ammonium sulfate crystals. The authors believe that the coloration of specimens, which proceeds from the corners toward the center, reflects the transformation process from the paramagnetic phase into a piezoelectric one. Below the transition point the crystal is cleft on the plane of cleavage. The authors succeeded in following the dynamics of this process. At the interface between two phases considerable inner stresses appear in crystals, the consequence of which is a crystal cleavage. Fig. 3 shows the temperature dependence of birefringence Δn for the b-cut of $(\text{NH}_4)_2\text{BeF}_4$ crystals in the temperature range from $+20^\circ$ to

-130°C . At -90°C birefringence was found to attain a marked maximum. This can also not be brought in connection with the change of the geometrical dimensions of the specimens due to thermal expansion. The domain structure remains invisible even when strong transversal electric fields are applied. Optical observations confirm the results of dielectric and calorimetric measurements, according to which there occurs a transition of first order in ammonium sulfate, and a transition of second order in ammonium fluoroberyllate, or thereabouts. The present paper was read at the Third Conference on Piezoelectricity, which took place in Moscow

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85005

Study of Optical Properties of Some
Piezoelectric Crystals

S/048/60/024/010/014/033
B013/B063

from January 25 to 30, 1960. There are 3 figures and 7 references: 3
Soviet. V

ASSOCIATION: Moskovskiy gos. universitet im. M. V. Lomonosova (Moscow
State University imeni M. V. Lomonosov) VNIIFTRI

Card 3/3

85881

S/048/60/024/011/C17/036
B006/B056

9.2181(2303,3203)
24,7800(1144,1162)

AUTHORS: Strukov, B. A. and Gavrilova, N. D.

TITLE: The Problem of Piezo Effects in Variconds

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1960,
Vol. 24, No. 11, pp. 1369 - 1371

TEXT: The present paper is a reproduction of a lecture delivered on the 3rd Conference on Ferroelectricity, which took place in Moscow from January 25 to 30, 1960. The authors deal with the piezoelectric effect occurring as a result of the application of a constant electric field in variconds (nonlinear dielectric elements). Fig.1 shows the frequency characteristics of the complex conductivity of a BK-2 (VK-2) sample of the size $18.4 \times 4.2 \times 3.0$ mm. Three groups of resonances may be distinctly observed: 100, 500, and 800 kc/sec. The results obtained by a quantitative investigation of the sample are illustrated in Fig. 2. The diagram gives the electromechanical proportionality factor as a function of the displacement voltage for various temperatures. $k_3(U)$ forms symmetric loops at changes of the voltage from +1000 v to -1000 v and vice versa.

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The Problem of Piezo Effects in Variconds

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An investigation of the frequency dependence of $\tan \delta$ (by means of Q-meter) showed that $\tan \delta$ has strong jumps. Further, the thickness oscillations were investigated and the thickness-piezo resonances were measured. It was found that the losses amount to only about 1/10 and that $\tan \delta$ within the range of the thickness resonances is not greater than 10%. The nonlinearity N may be determined by $N = C_0/C_U$; C_0 - capacity without displacement field, C_U - with displacement field. It may be shown that the parasitic piezoelectric thickness resonances can be removed from the frequency band of operation, if the measurements of the sample are carefully adjusted to the conditions under which work is carried out. There are 3 figures. ✓

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos. universiteta
im. M. V. Lomonosova (Department of Physics of Moscow
State University imeni M. V. Lomonosov)

Card 2/2

9.5110 (also 1055, 1072)

20714

5.4800

1043, 1137, 1273

S/120/61/000/001/057/062
E194/E184

AUTHORS: Koptsik, V.A., Strukov, B.A., and Yermakova, L.A.

TITLE: A Precision Laboratory Cryostat for Investigating the
Electrical and Elastic Properties of Crystals

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No.1, pp.184-188

TEXT: Progress in the development of laboratory cryostats is
briefly reviewed. A circuit developed by B.N. Vasil'yev which was
a further development of one used by Wilson and Stone (Ref.9) was
used in constructing a precision laboratory cryostat for
investigating the electrical and elastic properties of crystals in
the region of polymorphous phase conversions. The apparatus was
required to produce stable temperature points every 0.1-0.2 °C;
the stabilisation of the temperature should be within ± 0.005 °C
for a time of 30 minutes to one hour; the specimens should be
maintained in vacuum or in an atmosphere of dry gas; electrical
terminals in the thermostat chamber should be so designed as to
ensure the complete absence of temperature gradients. The
equipment consists of a cryostat, a temperature stabilising
circuit, a vacuum system and a potentiometer circuit for
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E194/E184

A Precision Laboratory Cryostat for Investigating the Electrical and Elastic Properties of Crystals

temperature measurement. The thermostat chamber of the cryostat consists of a copper block (9 in Fig.1), 180 mm high and 45 mm in diameter. In the cylinder are drilled two cylindrical ducts over three quarters of its length. One duct is used for thermocouples and the other for ampoules with specimens. The outer surface of the cylinder is threaded with a four start thread; two of the grooves contain nichrome wire heaters and the other two platinum resistance thermometers. The heater resistance is 1 kilohm and the thermometer resistance is 300 ohms. Under conditions of automatic control the surface of the copper block is maintained at a constant temperature. Because of the good thermal conductivity of the copper, after an interval of 10-15 minutes the same temperature is established in the volume for the test specimen. The copper block 9 covered with an aluminium screen 10 is placed in a cylindrical glass vessel with double walls. The inner space is connected to a vacuum flask containing liquid nitrogen. The temperature sensitive element is the platinum resistance

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S/120/61/000/001/057/062
E194/E184

A Precision Laboratory Cryostat for Investigating the Electrical and Elastic Properties of Crystals

thermometer would on the copper block and connected in a balanced bridge circuit, the other arms of which are manganese resistances and an inductionless resistance box. When the resistance of the platinum thermometer alters, it alters the phase of the output signal from the bridge and the function of the rest of the circuit is to apply the necessary amount of heat to the heater to maintain the resistance of the platinum thermometer equal to that of the resistance box. A schematic diagram of the control system is given in Fig.2 and the method of operation is explained. The vacuum system consists of two main parts, one of which is used to evacuate the inner cylinder of the cryostat and the other to pump from the glass ampoule with specimen holder. The system includes a rotary vacuum pump, an oil vapour trap and appropriate valves and pressure measuring devices. The required temperature is obtained and maintained as follows. The copper block with the ampoule is placed in the inner vacuum flask of the cryostat. Liquid nitrogen is poured into the outer flask in which the level of nitrogen is

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20714

S/120/61/000/001/057/062
E194/E184

A Precision Laboratory Cryostat for Investigating the Electrical and Elastic Properties of Crystals

automatically maintained. Cooling commences at a rate of about 0.5 °C/min. When within 3 to 4° of the temperature required to stabilise, the inner vacuum flask is evacuated until the pressure in it reaches 10^{-3} mm Hg, then the rate of cooling rapidly diminishes. The bridge is then balanced by means of the resistance blocks. The automatic temperature control circuit is then connected and any further reduction in temperature takes place in steps controlled by the resistance blocks. The accuracy of stabilisation was checked by measuring the e.m.f. of a triple copper constantan thermocouple with a sensitivity of 0.1 mV/°C. During 60 minutes the temperature changed by less than 0.005 °C. The cryostat has been working for two years and temperature characteristics of a number of crystals have been obtained. Gratitude is expressed to B.N. Vasil'yev for useful suggestions and to A.F. Solov'yev for help in setting up the circuit. There are 3 figures and 13 references: 5 Soviet and 8 English.

Card 4/7

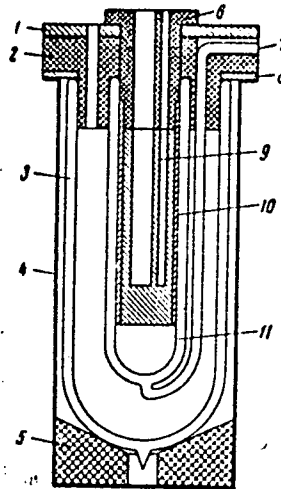
207114

A Precision Laboratory Cryostat ...

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E194/E184

Legend to Fig. 1:

- 1 - Textolite cover;
- 2 - Porous Plastic Cover;
- 3 - Outer Flask;
- 4 - Protective Tin Casing;
- 5 - Wooden Block;
- 6 - Ebonite Stopper;
- 7 - Glass Connecting Pipe
(to Pump);
- 8 - Rubber Ring;
- 9 - Copper Block;
- 10 - Aluminium Screen;
- 11 - Inner Glass Flask;



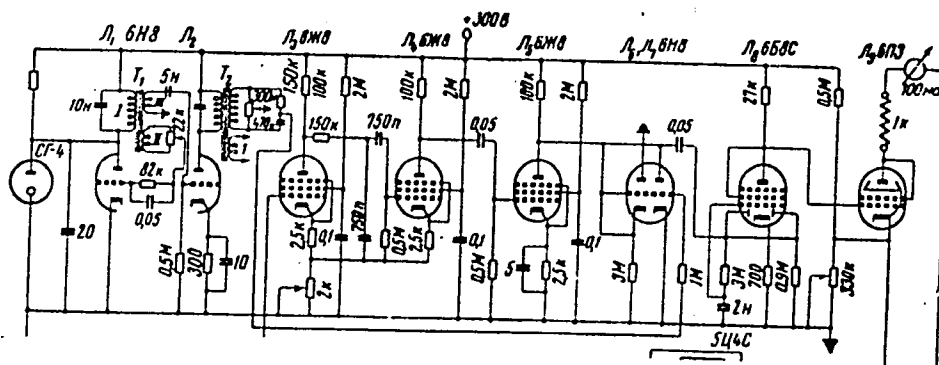
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A Precision Laboratory Cryostat

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Fig. 2

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A Precision Laboratory Cryostat ... S/120/61/000/001/057/062
E194/E184
ASSOCIATION: Fizicheskiy fakul'tet MGU
(Physics Division of MGU)
SUBMITTED: December 30, 1959

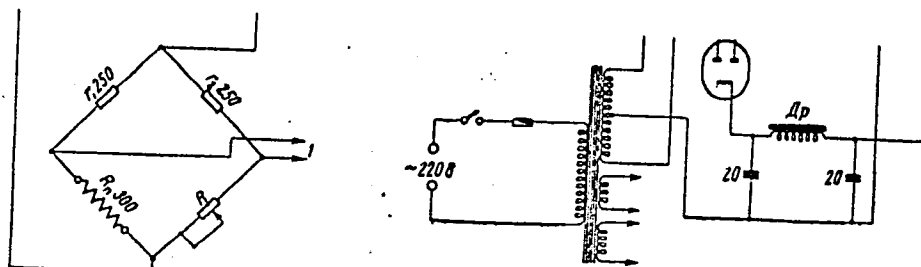


Fig. 2 continued

Card 7/7

STRUKOV, B.A.

Temperature dependence of birefringence in crystals of ammonium sulfate and fluoberyllate. Kristallografiia 6 no.4:635-639 J1-Ag '61. (MIRA 14:8)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Ammonium sulfate--Optical properties)
(Ammonium fluoberyllate--Optical properties)

STRUKOV, B.A.; GAVRILOVA, N.D.; KOPTSIK, V.A.

Some characteristics of the ferroelectric phase transition in
(NH₄)₂BeF₄ crystals. Kristallografiia 6 no.5:780-782 S.O 61.
(MIRA 14:10)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.
(Ammonium fluoberyllate--Electric properties)

37913

S/181/62/004/005/038/055
3106/3112

14-00000

AUTHORS: Strukov, B. A., Koptsik, V. A., and Ligasova, V. D
TITLE: Experimental study of the ferroelectric properties of ammonium acid sulfate in the vicinity of the high-temperature phase transition

PERIODICAL: Fizika tverdogo tela, v. 4, no. 5, 1962, 1334 - 1338

TEXT: An attempt is made to formulate the thermodynamic theory of Ginzburg and Devonshire for the ferroelectric NH_4HSO_4 . The measurements were made in the temperature interval from $+10^\circ$ to -20°C at $5 \cdot 10^{-2}$ mm Hg. In order to find the expansion coefficients A and B of the free energy, which enter into the relations for the displacement of the transition point in an electric field, the authors measured the effect of an electric field upon the phase transition in NH_4HSO_4 . The hysteresis loop observed in the ferroelectric phase vanishes at the point where ϵ reaches its sharp peak (1700 at -2.35°C). Measurements of the spontaneous polarization indicate that only the first two terms in the expansion for the free energy

Card 1/2

Experimental study of ...

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B108/B112

have to be taken into account. The coefficients at these terms were calculated from the experimental data: $A = 1.36 \cdot 10^{-2}$ and $B = 8.4 \cdot 10^{-8}$ electrical CGS. The measured displacement of the Curie temperature under the action of an electric field is in good agreement with calculated data $(T - T_0 = kE^{2/3}; k = 0.16)$. It is established that the high-temperature phase transition of NH_4HCO_3 is a second-kind transition. There are 7 figures and 1 table. The two most important English-language references are: H. H. Wieder. J. Appl. Phys., 30, 1010, 1959; R. Pepinsky. Phys. Rev., 111, 1508, 1958.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

DATE: January 16, 1962

Page 2/2

3614C
S/070/62/007/002/006/022
E132/E160

24,7300

AUTHORS:

Strukov, B.A., and Koptsik, V.A.

TITLE:

Thermodynamic examination of the ferroelectric phase transition in crystals of $(\text{NH}_4)_2\text{BeF}_4$

PERIODICAL: Kristallografiya, v.7, no.2, 1962, 234-237

TEXT: The experimental data relating to the phase transition in crystals of $(\text{NH}_4)_2\text{BeF}_4$ are examined in the framework of the thermodynamic theory of Ginzburg and Devonshire. The displacement of the Curie point under the action of an electric field has been calculated and measured experimentally. The free energy is calculated as a function of polarisation and temperature. Good thermodynamic data on the compound have been published earlier (Ref.5: B.A. Strukov, N.D. Gavrilova, V.A. Koptsik, Kristallografiya, v.6, 1961, 780) and the crystals were shown to follow the Curie-Weiss law. Theoretically the calculated value of the displacement is 7.4×10^{-5} degrees. volts⁻¹ cm and this agrees closely with the experimental value

Card 1/2

L 18007-63

EWP(q)/EWT(m)/BDS

APTTTC/ASD

JD

S/0181/63/005/006/1724/1727

ACCESSION NR: AP3001297

AUTHORS: Strukov, B. A.; Danilycheva, M. N.

TITLE: Thermal capacity of acid ammonium sulfate in the temperature interval from -70 to +14C

SOURCE: Fizika tverdogo tela, v. 5, no. 6, 1963, 1724-1727

TOPIC TAGS: thermal capacity, ammonium sulfate, Curie point, calorimeter

ABSTRACT: The authors measured the temperature dependence of thermal capacity in crystals of NH_4HSO_4 by using an adiabatic vacuum calorimeter. Experimental data show a jump in the curve of temperature dependence on thermal capacity at a point near the Curie temperature (-2.55C). This jump does not appear on the theoretical curve relating the same two factors. This jump in the curve of observed values caused the authors to consider the effect of fluctuations in polarization and the irregularity of distribution of these fluctuations throughout the body of the crystal in the critical region. "In conclusion we express deep thanks to V. A. Koptsik, who suggested the idea of the present paper, A. A. Sklyankin and A. P. Levanyuk for useful discussions and valuable remarks,

Card 1/2

L 18007-63

ACCESSION NR: AP3001297

and V. D. Letuchev and N. A. Berezina for aid in the work." Orig. art. has: ³
3 figures, 2 tables, and 3 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University)

SUBMITTED: 21Jan63

DATE ACQ: 01Jul63

ENCL: 00

SUB CODE: PH

NO REF SOV: 006

OTHER: 002

Card 2/2

ACCESSION NR: AP4011740

S/0181/64/006/001/0076/0079

AUTHORS: Strukov, B. A.; Minayeva, K. A.; Rodicheva, Ye. N.

TITLE: Reverse polarization characteristics of acid ammonium sulfate

SOURCE: Fizika tverdogo tela, v. 6, no. 1, 1964, 76-79

TOPIC TAGS: acid ammonium sulfate, reverse polarization, dielectric hysteresis, dielectric hysteresis loop, coercive field, pulsing reversal, pulsing polarity reversal

ABSTRACT: The authors made this study because of lack of information in the literature on pulsing polarity reversals in $(\text{NH}_4)\text{HSO}_4$. In the temperature interval from -2.5 to -119C this mineral has a rectangular dielectric hysteresis loop in a relatively small coercive field (on the order of 200-600 v/cm). This property makes the mineral of considerable practical importance. The characteristics of the polarity reversal were measured under carefully controlled stabilized temperature. These tests were made in the range from -20 to -100C. The samples (10 x 10 x 40 mm) were given rectangular pulses, the amplitudes and durations of which ranged from 0 to 120 v and 10 to 1200 microseconds respectively. The build-up time of the pulse did not exceed 0.1 microsecond. The frequency of pulse repetition was 250

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ACCESSION NR: AP4011740

cycles. The authors have shown that, as with other ferroelectric crystals, the W. Merz model (Phys. Rev., 95, 690, 1954) may be used for the pulsing reversals of polarization. Near the points of ferroelectric phase transition (-2.5 and -119C) spontaneous depolarization was detected in the samples. Orig. art. has: 7 figures and 1 table.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 06Jul63

DATE ACQ: 14Feb64

ENCL: 00

SUB CODE: PH

NO REF SOV: 002

OTHER: 008

Card 2/2

L 6830-65 EWT(m)/EPF(c)/EPH/EPF(j) Pcl/Pr-l/Pr-l/P1-l RPL/AFWL/IS(mp)-2/
 ASD(a)-5/AEDC(a)/SSD/AFETR/ESD(gs)/ESD(t)/RAEM(t) WW/JW/RM
 ACCESSION NR: AP4044970 S/0181/64/006/009/2862/2865

AUTHOR: Strukov, B. A.

TITLE: Specific heat of single-crystal triglycin sulfate in the tem-
 perature interval 0--55C

SOURCE: Fizika tverdogo tela, v. 6, no. 9, 1964, 2862-2865

TOPIC TAGS: specific heat, single crystal, triglycin sulfate, ferro-
 electricity, polarization, temperature dependence

ABSTRACT: In order to explain the character of the singularity which
 is observed in the difference between the specific heat at constant
 field (c_E) and the specific heat at constant polarization (c_P) in the
 interval 1--2C, and in order to make use of the results for a formula-
 tion of a thermodynamic theory of ferroelectricity, the authors mea-
 sured the specific heat of triglycin sulfate using a vacuum adiabatic
 calorimeter as constructed by Strelkov et al. (ZhFKh v. 28, 459, 1954).

Card

1/3

L 6830-65

ACCESSION NR: AP4044970

Two identical ferroelectric Y-cuts of the single crystal, measuring 30 x 11 x 3 mm, were used in the experiments. The sensitivity of the temperature-measuring system was 5×10^{-4} deg C. The total error in the measurements of the specific heat did not exceed 0.7%. The temperature variation of the specific heat c_E shows three regions, a smooth increase up to 37C, a plateau at 37--39C and a faster increase beyond 39C. The sharp increase in the specific heat near the point of phase transition is attributed to polarization fluctuations. The reason for the rise in specific heat beyond 39C is not fully clear. "I thank A. A. Sklyankin, A. P. Levanyuk for fruitful discussions, and A. A. Taraskin and T. N. Skomorokhova for participation in the measurements. Orig. art. has: 2 figures.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonsova (Moscow State University)

SUBMITTED: 21Apr64

SUB CODE: SS,TD

NR REF SOV: 003

ENCL: 01

OTHER: 005

Card

2/3

L 6830-65

ACCESSION NR: AP4044970

ENCLOSURE: 01

0

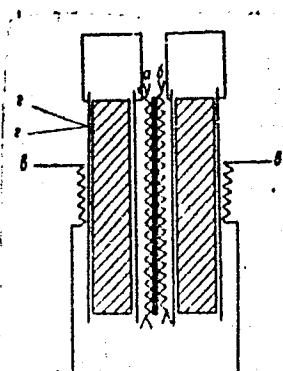


Fig. 1. Arrangement of heater and of resistance thermometer on the sample

- a - platinum resistance thermometer for measurement
- δ - heater
- θ - platinum resistance thermometer for control
- λ - differential thermocouple for control

Card

3/3

STREKOV, B.A., TOCHEV, S.I.

Phase boundaries and domain structure in ammonium sulfate crystals. Kristallografiya 9 no.3:426-427 Myale '64.

(MIRA 17:6)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova.

STRUKOV, B.A.

Heat capacity of single-crystal triglycine sulfate in the
temperature range 0° to $+55^{\circ}\text{C}$. Fiz. tver. tela 6 no.9:2862-
2865 S '64. (MIRA 17:11)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

L 57568-65 EWT(1)/EPA(s)-2/EWT(m)/EPF(c)/EWP(j)/EEG(t) Pc-4/Pr-4/Pt-7/P1-4

TOPIC GG/RM

ACCESSION NR: AP5016134

UR/0048/65/029/006/0982/0934/55

AUTHOR: Strukov, B.A.; Taraskin, S.A.; Skomorokhova, T.L.; Minayeva, K.A.

TITLE: Effect of an electric field on the heat capacity of single-crystal triglycine sulfate /Report, 4th All-Union Conference on Ferroelectricity held in Rostov-on-the-Don 12-18 Sept 1964/

SOURCE: AN SSSR.Izvestiya.Ser.fizicheskaya,v.29, no.6, 1965, 982-984

TOPIC TAGS: ferroelectric crystal, triglycine sulfate, heat capacity, electrocaloric effect 2

ABSTRACT: The authors have measured the heat capacity at constant electric field of a triglycine sulfate single crystal at temperatures from 47 to 52°C both with zero electric field and with an applied field of 450 V/cm and have also observed the electrocaloric effect in this material at temperatures near the Curie point. The experimental technique was the same as that previously described by one of the authors (B.A.Strukov, Fiz.tverdogo tela 6,2862,1964). The effect of the

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L 57568-65

ACCESSION NR: AP5016134

bias field on the heat capacity was to smooth out the discontinuity at the Curie point and reduce the maximum value from 0.49 to 0.44 cal/g deg. In the presence of the bias field the heat capacity changed smoothly from its value in the ferroelectric phase to its value in the paraelectric phase over a temperature interval of nearly 20°, whereas in the absence of a bias field most of this change was accomplished in a small fraction of a degree. This result is derived theoretically from the thermodynamic theory of V.L.Ginzburg (Uspekhi fiz.nauk 38, 490, 1949). In the absence of a bias field the dielectric constant was found to reach its maximum at a temperature from 0.2 to 0.3°C above that at which the heat capacity reached its maximum. This is explained by the fact that it is the ratio of the heat capacity to the temperature, and not the heat capacity itself, that should go through a maximum at a second order transition point. The electrocaloric effect was investigated at temperatures above but close to the Curie point. At a temperature very close to the Curie point it was found that a field of 1.5 kV/cm produced a reversible heating of 0.1°C. This effect decreased rapidly with increasing temperature and was absent at 1.5°C above the Curie point. "The authors express their gratitude to V.A.Koptsik

Card 2/3

L 57568-65
ACCESSION NR: AP5016134

for his interest in the work and for valuable remarks." Orig.art.
has: 4 formulas and 3 figures.

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo uni-
versiteta im. M.V.Lomonosova (Physics Department, Moscow State Univ.)

SUBMITTED: 00

ENCL: 00

SUB CODE: SS

NR REF SOV: 004

OTHER: 003

Card

HL
3/3

L 14146-66 EWT(1)/EWT(m)/EWP(j)/T IJP(c) GG/RM

ACC NR: AP6000857 SOURCE CODE: UR/0181/65/007/012/3579/3581

AUTHORS: Strukov, B. A.; Minayeva, K. A.

32

30

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Some features of pulsed repolarization of naturally unipolar crystals of triglycin sulfate 44.55

SOURCE: Fizika tverdogo tela, v. 7, no. 12, 1965, 3579-3581

TOPIC TAGS: dielectric polarization, organic crystal, paraelectric material

ABSTRACT: The purpose of the investigation was to determine the influence of natural unipolarity of triglycin sulfate on the spontaneous depolarization, namely the transition of the crystal from the single-domain into the multiple domain state. This is a continuation of a similar investigation performed by the authors earlier on NH_4HSO_4 crystals (FTT v. 6, 76, 1964). The natural unipolarity of the

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2

L 14146-66
ACC NR: AP6000857

2

investigated crystals ranged from zero to 100 V/cm. Particular attention was paid to the temperature interval near the phase transition point where this phenomenon is observed, since it is in this range that the crystal loses its ability to store information. A total of 30 samples was tested by the standard procedure. The results show that application to the crystal of a definite sequence of electric voltage pulses in a certain temperature interval below the Curie point gives rise to a regular change in the areas under the current pulses. The crystals possessing internal unipolarity lose their ability of storing information far below the phase transition point. The spontaneous realignment of the domain structure at a certain temperature below the Curie point leads apparently to additional anomaly in the specific heat, the paraelectric coefficients, and a few other properties of the triglycin sulfate crystals. The temperature of total depolarization decreases linearly with increasing internal unipolarity of the sample. Authors thank V. A. Koptsik for interest in the work and V. Kh. Kozlovskiy for useful advice during the discussion of the results. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 14Jun65/ ORIG REF: 004/ OTH REF: 005

Card *FW 11/*
2/2

L 04418-67 EWP(l)/EWT(m)/EWP(j)/T/EWP(t)/ETI/EWP(k) LJP(c) JD/WW/HW/RM
 ACC NR: AP6034270 SOURCE CODE: UR/0386/66/004/007/0255/0258

AUTHOR: Mylov, V. P.; Polandov, I. N.; Strukov, B. A.

ORG: Chemistry Department of the Moscow State University im. M. V. Lomonosov
 (Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta)

TITLE: New phase-transition line in crystalline triglycine selenate at high pressures

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu.
 Prilozheniye, v. 4, no. 7, 1966, 255-258

TOPIC TAGS: ferroelectric material, phase transition, high pressure research, dielectric constant, electric polarization, Curie point

ABSTRACT: This is a continuation of earlier work (Fiz. tverdogo tela v. 4, 3337, 1962) on the ferroelectric properties of triglycine sulfactate and triglycine selenate crystals. The present study is confined to triglycine selenate but the hydrostatic pressure has been raised to 8000 kg/cm². Measurements were made of the dielectric constant and the spontaneous polarization in the phase-transition region. It was found that the dielectric constant decreases at the Curie point with increasing pressure, the relative change in the dielectric constant at the Curie point at 5000 kg/cm² being ~60%. At pressures up to 8000 kg/cm² the Curie temperature shifts linearly into the region of higher temperature at a rate 3.7×10^{-3} deg/kg/cm², which is in good agreement with the results obtained earlier at pressures up to 2700 kg/cm². Measurements of the spontaneous polarization of triglycine selenate with the aid of a "hystereso-

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ACC NR: AP6034270

graph" (Izv. VUZov. Priborostroyeniya v. 3, 25, 1960) show that at room temperature and at a pressure near 6000 kg/cm^2 the triglycine selenate crystal goes over to the paraelectric state. When the temperature is raised at fixed pressure, the crystal again becomes ferroelectric, as manifest by the appearance of a hysteresis loop on the oscilloscope screen and by the readings of the hysteresograph. Further increase in temperature again makes the crystal paraelectric after a phase transition. It is thus found that at 6000 kg/cm^2 triglycine selenate goes through two ferroelectric phase transitions as the temperature is raised. Further investigations were made with the pressure varied under isothermal conditions. During the course of the experiment, hysteresis loops were observed, and the transition temperature was established as the spontaneous polarization decreased to zero and the hysteresis loop disappeared. The investigations show that in the temperature region $0 - 50^\circ\text{C}$, at pressures $5800 - 7800 \text{ kg/cm}^2$, there exists in the triglycine selenate crystal a new line of phase transitions which, together with the transition line previously obtained, delineates the region of existence of the ferroelectric state of the triglycine selenate crystals. The authors thank the director of this work, Academician L. F. Vereshchagin for continuous interest and help. Orig. art. has: 2 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 05Jul66/ ORIG REF: 002/ OTH REF: 005

2/2 vmb

L 17549-66 EPF(n)-2/EWP(j)/EWP(k)/EWT(d)/EWT(l)/EWT(m)/T IJP(c) RM/WW
 ACC NR: AP6003757 SOURCE CODE: UR/0181/66/008/001/0032/0035

AUTHORS: Minayeva, K. A.; Strukov, B. A.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Effect of constant electric field on the absorption of ultrasound near the Curie temperature in triglycine sulfate crystals

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 32-35

TOPIC TAGS: ultrasonic absorption, Curie point, electric polarization, polar crystal, piezoelectric effect, paraelectricity

ABSTRACT: This is a continuation of earlier work, where the authors calculated the coefficient of absorption of ultrasound in triglycine sulfate crystals, which have no absorption connected with polarization relaxation at temperatures above the Curie point. The present article deals with the dependence of the coefficient of relaxation absorption of ultrasound on the constant electric field in the region of the Curie temperature in the same crystals. A relation is derived

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L 17549-66

ACC NR: AP6003757

4
for the absorption coefficient, in which account is taken of the fixed bias field. It is shown that application of the dc field causes a decrease in the relaxation time and accordingly a decrease in the absorption of sound in the polar phase. Above the Curie point, the appearance of an induced piezoeffect leads to an increase in the sound absorption. The calculation is based on the relation between the thermodynamic potential and the polarization components in different directions. The results show that in the polar phase the absorption of ultrasound is decisively influenced by the change in the relaxation time, while in the para phase it is governed by the increase in the induced polarization and the intensification of the electromechanical coupling. The results are compared with experimental data by the authors and by others and are in qualitative agreement. Authors thank V. A. Koptsik, I. A. Yakovlev, R. Z. Levitin, and A. P. Levanyuk for interest in the work and for valuable discussions. Orig. art. has: 3 figures and 10 formulas.

SUB CODE: 20/ SUBM DATE: 24Jun65/ ORIG REF: 012/ CTH REF: 001

Card 2/2 nst

L 25444-66 EPF(n)-2/ENT(1)/EWT(m)/ETC(m)-6/EWP(e) WH
 ACC NR: AP6009701 SOURCE CODE: UR/0181/66/003/003/0972/0974

AUTHORS: Strukov, B. A.; Minayeva, K. A.; Skomorokhova, T. L.; Isupov, V. A. 102
 B 100

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet); Institute of Semiconductors, AN SSSR, Leningrad (Institut poluprovodnikov AN SSSR)

TITLE: Thermal properties of antiferroelectric ceramic $\text{PbMg}_{1/2}^{\text{W}}\text{W}_{1/2}\text{O}_3$

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 972-974

TOPIC TAGS: antiferroelectric material, lead compound, thermal effect, specific heat, temperature dependence, phase transition, dielectric constant, electric hysteresis, antiferroelectricity, metal ceramic material

ABSTRACT: The authors report results of measurements of the excess energy of the antiferroelectric phase transition in $\text{PbMg}_{1/2}^{\text{W}}\text{W}_{1/2}\text{O}_3$, and compare the results with those previously obtained for this compound. The specific heat was measured by a method described by one

Card 1/2

L 25444-66

ACC NR: AP6009701

2

of the authors earlier (Strukov, FTT v. 6, 2862, 1964). The results show that the specific heat exhibits an anomalous increase in the temperature interval between 24 and 36C, rising from about 30 to 164 cal/mole-deg at 30.5C and then dropping again to about 29 cal/mole-deg. This anomaly at the vicinity of the Curie point indicates that the phase transition is of first order. Slight fluctuations on both sides of the maximum are briefly discussed but are shown not to be connected with any additional phase transition. The temperature dependence of the dielectric constant exhibits a hysteresis, likewise showing that the phase transition is of first order. The results can be reconciled with the theoretical temperature dependence of the square of the spontaneous antipolarization. The excess heat of the phase transition is determined from the temperature dependence of the specific heat and is found to be 276 cal/mole. The corresponding resultant change in volume is $-0.22 \text{ cm}^3/\text{mole}$, which is in fair agreement with results by others based on calculations. The authors thank V.A. Koptsik for interest in the work and valuable remarks, and N.N. Kraynik for supplying experimental data on thermal expansion of the investigated ceramic. Orig. art. has: 2 figures and 3 formulas.

SUB CODE: 11,20/ SUBM DATE: 21Oct65/ ORIG REF: 008/ OTH REF: 002

Card

2/2 CC

ACC NR: AP6015500

SOURCE CODE: UR/0181/66/008/005/1631/1633

AUTHOR: Minayeva, K. A.; Strukov, B. A.; Koptsik, V. A.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Relaxational absorption of ultrasound in the ceramic $\text{PbMg}_{1/2}\text{W}_{1/2}\text{O}_3$ near the phase transition temperature

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1631-1633

TOPIC TAGS: acoustic absorption, ultrasound absorption, antiferroelectric material, metal ceramic material, second order phase transition

ABSTRACT: Ultrasound absorption in a synthesized antiferroelectric ceramic $\text{PbMg}_{1/2}\text{W}_{1/2}\text{O}_3$ was examined at frequencies of 5, 10, and 15 megacycles per second. It was found that (1) there is a considerable anomaly of ultrasound absorption near the phase transition temperature; (2) the absorption curve is non-symmetric with respect to the transition temperature; (3) in the paraphase, the absorption is small and not relaxational; (4) at temperatures below the phase transition temperature of second order, there is a quadratic relationship between the sound absorption and the frequency; (5) part of the absorption component does not depend on the frequency and is not caused by relaxation but is due to some other factor, e. g., sound scattering on the grain bound-

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I. 06305-67

ACC NR: AP6015500

aries of the crystallites of the ceramic. In antiferroelectrics of this type, the absorption anomaly is related to the spatial polarization vector which plays the role of an order-disorder parameter; in the antiferroelectric phase it defines the dipole superstructure and turns to zero above the Curie point. The anomaly of sound absorption is related to increased relaxation time of this parameter near the phase transition temperature of second order. Specimens of the ceramic were made available by V. A. Isupov. L. A. Shuvalov assisted in the investigation of sound absorption at low frequencies of the order of 50 to 100 kilocycles per second. Orig. art. has: 2 figures.

SUB CODE: 20/

SUBM DATE: 08Dec65/

ORIG REF: 019/

OTH REF: 001

Card 2/2

ACC NR: AFG037019

(A,N)

SOURCE CODE: UR/0181/66/001/011/3436/3439

AUTHOR: Sonin, A. S.; Vasilevskaya, A. S.; Strukov, B. A.

ORG: none

TITLE: Electrooptical properties of crystals of potassium dihydrophosphate and deuterated potassium dihydrophosphate in the region of phase transitions

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3436-3439

TOPIC TAGS: electrooptic effect, potassium compound, deuterium compound, phase transition, ferroelectricity, Curie point, temperature dependence, piezooptic effect.

ABSTRACT: The reason for this study is that the electrooptical properties of single-crystal KDP and DKDP have not been thoroughly investigated in the ferroelectric rhombic phase. The study was made in the static mode at wavelength 5350 \AA . The investigated sample consisted of two identical KDP and DKDP plates so arranged that their initial birefringence was compensated. The first plate was placed in an optical cryostat in which the temperature was maintained within $\pm 0.01^\circ\text{C}$, the circuitry used was described elsewhere (PTE no. 1, 184, 1961). The measured temperature dependence of the electrooptic coefficients of the two crystals shows that on approaching the Curie points, these coefficients increase rapidly in accordance with a hyperbolic law, reaching at the Curie points themselves values of 1.5×10^{-3} and 2.5×10^{-3} esu for KDP and DKDP, respectively. The voltages required to produce a half-wavelength path difference were very low, 12 volts for KDP and 7 volts for DKDP. The percentages of

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ACC NR: AP6037019

the primary electrooptical effects were found to be 92 and 93% respectively. Measurement of the piezooptic constant of the DKDP crystals as a function of the temperature in the range from -40C to room temperature at the same wavelength shows the piezooptic constant to be almost independent of the temperature and to have no anomalies on approaching the Curie point. This is evidence that the contribution of the primary effects of the summary electrooptic effect of a mechanically free DKDP crystal does not change when the Curie point is approached from the paraelectric phase side, and the anomaly of the electrooptic effect is electronic in nature. The authors thank I. A. Slepko and M. P. Kalitkina for help with the experiments, and also I. S. Rez and L. G. Lomova for a discussion of the results. Orig. art. has: 2 figures, 3 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 18Mar66/ ORIG REF: 003/ OTH REF: 003

Card 2/2

SOURCE CODE: UR/0181/67/009/001/0116/0121

ACC NR: AP/005352

AUTHOR: Krasnikova, A. Ya.; Koptsik, V. A.; Strukov, B. A.; Van Min

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: Dielectric and optical investigations of the irreversible ferroelectric phase transition in crystals of potassium

SOURCE: Fizika tverdogo tela, v. 9, no. 1, 1967, 116-121

TOPIC TAGS: potassium compound, ferroelectricity, phase transition, dielectric constant, electric polarization, double refraction

ABSTRACT: The authors carried out precision measurements of the dielectric constant, polarization, and the coercive field, and also investigations of birefringence of tetragonal potassium ferrocyanide crystals in the temperature interval -10 - -70C. The apparatus used for the investigations is described elsewhere (PTE no. 1, 183, 1961 and earlier). All the electric and optical properties exhibited anomalies near the ferroelectric phase transition point at -55.6C. For the tetragonal crystals tested, the irreversible transition is accompanied by spontaneous polarization along the [101] and [101] directions, with values 1 and 0.75 microcoulomb/cm² respectively. It was also observed that in crystals with small angles between the optical axes irreversible transitions are observed at temperatures that increase with increasing angle between the optical axes. Comparison of the results with nuclear magnetic res-

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ACC NR: AP7005332

onance and other tests made on these crystals leads to the conclusion that a probable connection exists between the physical properties and the fact that as a rule a potassium ferrocyanide crystal does not crystallize with any one distinct structure, but all its structural types crystallize simultaneously so that it is difficult to establish the limits governing the crystallization conditions of any particular modification. The authors thank G. S. Zhdanov and M. M. Umanskiy for a discussion of the results. Orig. art. has: 7 figures.

SUB CODE: 20/ SUBM DATE: 26May66/ ORIG REF: 006/ OTH REF: 003

Card 2/2

STRUKOV, B.I.; PROKHOROV, N.I.

~~SECRET~~

Peat industry of Denmark. Torf. prom, 34 no.4:33-34 '57.

(MLRA 10:6)

1. Ministerstvo toplivnoy promyshlennosti RSFSR (for Strukov).

2. Glavtorffond RSFSR (for Prokhorov),
(Denmark--Peat industry)

STRUKOV, B.I., inzh.

Make a success of the 1958 peat season. Torf. prom. 35 no.3:1-4
'58. (MIRA 11:5)

1.Gosplan RSFSR.

(Peat industry)

STRUKOV, B.I.

Prospects for the development of the peat briquets industry
during the years 1959 through 1965. Torf. prom. 35 no. 4:25-26
'59. (MIRA 11:7)

1. Nachal'nik pod"otdela torfa, otdela uglya, torfa slantsav
Gosplana RSFSR.

(Peat)
(Briquets(Fuel))

ALEKSEYEV, Ye.T.; APENCHENKO, S.S.; BASOV, A.P.; BAUSIN, A.F.; BERSHADSKIY, L.S.;
VELLER, M.A.; GINZBURG L. N.; GUSEV, S.A.; DANILOV, G.V.; DOLGIKH, M.S.;
DRUZHININ, N.N.; YEFIMOV, V.S.; ZAVADSKIY, N.V.; IVASHECHEIN, N.V.;
KARAKIN, F.F.; KUZHMAN, G.I.; LOBANOV, S.P.; MERKULOV, Ya.V.; NIKODIMOV,
P.I.; PANKRATOV, N.S.; PYATAKOV, L.V.; RODICHEV, A.F.; SMIRNOV, M.S.;
STRUKOV, B.I.; SAVOCHKIN, S.M.; SAMSONOV, N.N.; SINITSYN, N.A.; SKOLOV,
A.A.; SOLOPOV, S.G.; CHELYSHEV, S.G.; SHCHEPKIN, A.Ye.

Fedor Nikolaevich Krylov; obituary. Torf. prom. 35 no.6:32 '58.
(MIRA 11:10)
(Krylov, Fedor Nikolaevich, 1903-1958)

STRUKOV, B.I., inzh.

Peat industry on the forty-first anniversary of the Great October
Socialist Revolution. Torf. prom. 35 no.7:1-4 '58. (MIRA 11:11)

1. Gosplan RSFSR.
(Peat industry)

STRUKOV, B.I., inzh.

We shall apply the decisions of the June Plenum of the Central
Committee of the CPSU. Torf. prom. 36 no.5:1-4 '59.
(MIRA 13:1)

1. Gosplan RSFSR.
(Peat industry)

BELOKOPYTOV, I.Ye.; BERESNOVICH, V.V.; BERSHADSKIY, L.S.; VEYTS, L.F.;
ZHUKOV, A.G.; IVASHECHKIN, N.V.; KUZHMAN, G.I.; LASHNEV, I.A.;
MURASHOV, F.G.; NIKODIMOV, P.I.; PYATAKOV, L.V.; SAMSONOV, N.N.;
SEMENSKIY, Ye.P.; SINITSYN, N.A.; SOLOPOV, S.G.; STRUKOV, B.I.;
STEBIKHOV, M.I.; TSUPROV, S.A.; CHERNOV, A.A.; CHULYUKOV, M.A.

Ivan Aleksandrovich Monakin. Torf. prom. 37 no. 3:37 '60.
(MIRA 14:1)
(Monakin, Ivan Aleksandrovich, 1908-1960)

ROVENSKIY, Zinoviy Il'ich; UYEMOV, Avenir Ivanovich; UYEMOVA, Yekaterina
Andreyevna; STRUKOV, E., red.; DANILINA, A., tekhn.red.

[Machine and human thought; philosophical essay on cybernetics]
Mashina i mysl'; filosofskii ocherk o kibernetike. Moskva, Gos.
izd-vo polit.lit-ry, 1960. 142 p. (MIRA 13:7)
(Cybernetics)

POPOV, Vladimir Fedorovich; STRUKOV, E., red.; KLIMOVA, T., tekhn.
red.

[Disturbers of the dead calm] Vozmutiteli spokoistviia. Mo-
skva, Gos.izd-vo polit.lit-ry, 1961. 30 p. (MIRA 15:1)
(Labor and laboring classes)

KOL'MAN, Ernest; STRUKOV, E., red.; NUKHIN, Yu., tekhn. red.

[Lenin and modern physics] Lenin i noveishaia fizika. 2. izd.
Moskva, Gos.izd-vo polit.lit-ry, 1961. 156 p. (MIRA 15:4)
(Lenin, Vladimir Il'ich, 1870-1924) (Physics)

ZHARIKOV, Leonid Mikhaylovich; STRUKOV, E., red.; KLIMOVA, T.,
tekhn. red.

[The great march] V bol'shom pokhode. Moskva, Gos. izd-vo
polit. lit-ry, 1962. 29 p. (MIRA 15:4)
(Efficiency, Industrial)

BUDREYKO, Nikolay Andreyevich; STRUKOV, E., red.; MUKHIN, Yu.,
tekhn.red.

[Cognition of the secrets of matter] Poznanie tain materii;
filosovskii ocherk. Moskva, Gos.izd-vo polit.lit-ry, 1962.
198 p. (MIRA 15:5)

1. Zaveduyushchiy kafedroy dialekticheskogo i istoricheskogo
materializma Moskovskogo khimiko-tekhnologicheskogo instituta
im. D.I.Mendeleyeva (for Budreyko).
(Science--Philosophy) (Matter)

STRUKOV, F. I.---

Using sulfite-alcohol waste liquor for aerating muds during oil
well drilling in absorption horizons. Neft. khoz. 38 no.7:50-52
Jl '60. (MIRA 14:10)

(Oil well drilling fluids)
(Sulfite liquor)

Strukov, F.Ya.
TAGER, I.L., professor; MYASNIKOV, A.L., professor; STRUKOV, F.Ya., professor.

Clinical significance of cholecystography. Terap.arkh. 25 no.2:85 Mr-Ap
'53. (MIRA 6:5)

(Gall bladder) (Diagnosis, Radioscopic)

STRUKOV, I.A.; ETKIN, V.S.

Study of the dynamic breakdown phenomena in semiconductor
diodes at microwave frequencies. Radiotekh. i elektron. 9
no.4:757-760 Ap '64. (MIRA 17:7)

ETKIN, Valentin Semenovich; GERSHENZON, Yevgeniy Mikhaylovich.
Prinimali uchastiye LAVUT, A.I.; LYUBIMOVA, T.F.; SOINA,
N.V.; KHOTUNTSEV, Yu.L.; ROZHKOVA, G.I.; KARNANOVA, Ye.S.;
STRUKOV, I.A.; VYSTAVKIN, A.N., retsenzent; ARONOV, V.L.,
retsenzent; MASHAROVA, V.G., red.

[Superhigh-frequency parametric systems using semiconductor
diodes] Parametricheskie sistemy SVCh na poluprovodnikovyykh
diodakh. Moskva, Sovetskoe radio, 1964. 351 p.
(MIRA 17:11)

L 6642865 ASD(a)-5/ESD(t)/RAEM(t)

ACCESSION NR: AP4038632

S/0109/64/009/004/0757/0760

AUTHOR: Strukov, I. A.; Etkin, V. S.

TITLE: On the investigation of dynamic breakdown of microwave semiconductor diodes

SOURCE: Radiotekhnika i elektronika, v. 9, no. 4, 1964, 757-760

TOPIC TAGS: semiconductor diode, dynamic breakdown, effective noise temperature, minority carrier cascade multiplication

ABSTRACT: The breakdown occurring frequently in diodes operating at a frequency whose period is shorter than the lifetime of the carriers was investigated at 3 cm at high power (1 W). The investigation covered the voltage-current characteristics of the diodes, the diode radiation spectrum, and the diode noise radiation spectrum. The voltage-current characteristics exhibited sharp peaks due to the discrete spectrum of the generated oscillations, and the premature breakdown may be due to the detection of the oscillations produced when microwave power is applied. Voltage-current characteristics without peaks were also observed, and in this case the breakdown was not accompanied by oscillations. Tests of the noise radiation and of the noise temperature rise indicated that the increase in

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ACCESSION NR: AP4038632

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the effective noise temperature of reactance microwave amplifiers with diodes is due to parasitic oscillation occurring when microwave power is applied to the diodes. Even in the case of a 'smooth' voltage-current characteristic the noise temperature can be raised by the appreciable current flowing in the p-n junction, the nature of which is not yet clear. The processes occurring during the breakdown can also increase the effective noise temperature, but not to the same extent as parasitic oscillation. "We are grateful to V. L. Aronov, V. M. Val'd-Perlov, and Ye. M. Gershenson for a discussion of this work." Orig. art. has: 3 figures and 1 table.

ASSOCIATION: None

SUBMITTED: 04Mar63

ENCL: 02

SUB CODE: EC, SS

NR REF SOV: 003

OTHER: 004

Card

2/4

L 6642-65

ACCESSION NR: AP4038632

ENCLOSURE: 01

0

1	2	3	4	5
№ диода	$I_{обp, \mu A}$	$U_{см, opб, V}$	KCN	$P_{изл} в кT$
1	-10	2,5	3	0,1
2	-25	2,5	1,4	0,5
3	-32	2,5	2,5	1,5
4	-10	2,5	3	0,3
5	-80	2,5	3	5

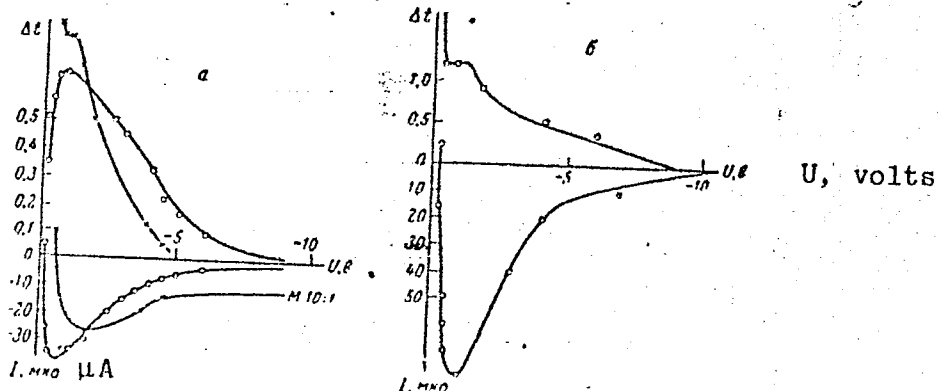
Results of measurement of excess noise radiation at a frequency close to 10 Gc

- 1 - Diode number, 2 - $I_{inv, \mu A}$
 3 - Inverse bias voltage, 4 - SWR
 5 - excess radiation power in kT

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ACCESSION NR: AP4038632

ENCLOSURE: 02



Examples of the dependence of excess noise temperature on bias voltage. Volt-ampere curves are included for interest.

Card 4/1

STRUKOV, I.N.; GEL'D, P.V.

Effect of "leboit" transformations on the stability of ferrosilicon.
Fiz.met. i metalloved. 3 no.3:564-565 '56. (MLRA 10:3)

1. Ural'skiy politekhnicheskii institut imeni S.M. Kirova.
(Iron-silicon alloys)

STRUKOV, I.N., and GEED, P.V.

"Some Properties of Fe₂Si-Si System,"
lecture given at the Fourth Conference on Steelmaking, A.A. Baikov, Institute of
Metallurgy, Moscow, July 1 - 6, 1957